

High-Throughput Optically-Generated RNG via Quantum Trajectory Deviation Amplification

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A true RNG capable of exceptionally high throughput should be attainable by emitting light through a single strand of fiber which is passed through a waveguide. The fiber would have a bifurcative median as in a traditional fiber-optic splitter and waves of light would be directed with extreme precision toward the median.

Ordinarily, this would have the effect of directing half of the light down one fiber and half down the other. However, by adding the ingredient of three or more glass nanospheres with diameters somewhat greater than the phase height of the light waves directly before the median, any quantum deviation from orientation toward the precise median would be amplified.

If we visualize the glass spheres as having two hemispheres (a left and a right) then any deviation to the right would produce a deviation in trajectory to the left due to the lensing effect. When multiple spheres are aligned, this effect can be amplified as much as need be. When the light waves strike the second sphere, they necessarily do so in the left hemisphere, resulting in a deviation to the right of a greater magnitude. When it reaches the third sphere, the same thing happens, with the light now having returned to its original direction of deviation but with that deviation now being of substantially greater magnitude. All that is necessary for a fiber-optic bifurcation to be turned into an RNG is for these nanospheres to be used in conjunction with the waveguide in order to ensure a trajectory deviation which has its roots in quantum-mechanical influences in order to ensure a deviation exceeding the phase height of a wave of light, which would, for blue light, be about 11nm. This would ensure, in each case, that waves of light travel exclusively down one fiber or the other. However, it should be noted that in a ternary data system, there may be some advantage to purposefully allowing light to travel down both paths as a third option.

Although the waveguide used is designed to ensure that all light waves start off with the same trajectory and, therefore, have an equal chance of either wavering to the left or right as a result of quantum-mechanical influences, the spheres allow us to ensure that each wave of light travels exclusively down one corridor and not the other. This would mechanism would transform an optical splitter into something more like a switchtrack for light which allows the light to decide which way it wants to go and which can alternate with extreme rapidity. For bit-flipping applications, this mechanism could be purposefully biased by a modest, optically-controlled magnetic field in order to force the light to bifurcate either to the left or the right.

If the light travels down the left corridor/fiber, this can be counted as a "0," and if it travels down the right corridor/fiber, this can be counted as a "1."

As this method does not require any algorithmic post-processing or processor polling, it is capable of generating extremely large quantities of random numbers extremely quickly. A physical mechanism for mixing the outputs of different *optical trajectory deviation amplification* RNG modules can be physically mixed in order to ensure greater randomness or to further increase throughput.

For applications including cryptographic bruteforcing, these outputs of these RNG modules can be loaded directly into RAM modules by striking special thyristors adjacent to the voltage cells with the light waves in order to produce a photoelectric effect which, owing to the action of the thyristor, allow voltage to enter a voltage cell if a "1" is indicated by the RNG. This functionality may require designing RAM to incorporate both electrical and optical channels running in parallel toward voltage cells.

The development of this technology would provide a substantially-improved floating-point processing capability as well as a possible avenue toward mitigation of bottlenecks in integration mechanisms coupling optical and electronic processing systems.